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Source: *Pacific Historical Review*, Vol. 47, No. 4 (Nov., 1978), pp. 565-584

Published by: [University of California Press](#)

Stable URL: <http://www.jstor.org/stable/3637372>

Accessed: 22/06/2014 02:26

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# Pioneering Groundwater Legislation in the United States: Mortgages, Land Banks, and Institution-Building in New Mexico

Robert G. Dunbar

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FROM THE GUADALUPE and Sacramento mountains, southeastern New Mexico slopes toward the Pecos River and the western escarpment of the Llano Estacado. For seventy miles along the west bank of the river lies the Roswell Artesian Basin where once John S. Chisum grazed his Jinglebob cattle<sup>1</sup> and where farmers later drilled flowing wells to irrigate productive fields. Here New Mexicans, in response to pressure from an agency of the federal government, originated in the third and fourth decades of this century groundwater-control institutions which have served as models for most of the western states as well as some states in the East.

This story of institutional pioneering has its beginning in the geological make-up of the Roswell Artesian Basin. A cross-

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The research upon which this study is based was supported in part by funds provided by the U.S. Dept. of the Interior, Office of Water Research and Technology, as authorized under the Water Resources Act of 1964, Public Law 88-379, as amended.

<sup>1</sup>Harwood P. Hinton, Jr., "John Simpson Chisum, 1877-84," *New Mexico Historical Review*, XXXI (1956), 177-205, 310-337.

section of the basin reveals roughly three layers of rock and alluvial debris. The artesian aquifer is found in a stratum of San Andres limestone, which is exposed along the base of the mountains and is easily replenished by rainfall. Above the aquifer lies a relatively impervious formation which geologists call an aquitard; on top of it is an alluvial fill deposited through the millennia by the Pecos River. The fall of rain and snow on the exposed portion of the San Andres limestone fills its interstices and creates a pressure below the aquitard not unlike the standpipe of a municipal water system. When wells are drilled into it, water gushes forth in considerable volume, and yields of several thousand gallons per minute are not uncommon.<sup>2</sup>

In the days of the Lincoln County War and the slaying of Billy the Kid by Pat Garrett, the basin was in Lincoln County, but in 1889 the territorial legislature redrew the political boundaries and placed the basin in Chaves and Eddy counties. Then Chaves, with Roswell as its county seat, had a population of approximately a thousand.<sup>3</sup> Although cattle-raising was still the dominant industry, some people were farmers. Since the average annual rainfall was thirteen inches, they had to irrigate their fields, which was accomplished by small diversions from the Rio Hondo, South Spring River, and other streams flowing into the Pecos River.<sup>4</sup> However, in 1889 Pat Garrett and six associates commenced the construction of a larger diversion from the Hondo, which became known as the Northern Canal. Designed to irrigate 15,000 acres, it eventually extended south-

<sup>2</sup>Albert G. Fiedler and S. Spencer Nye, "Geology and Ground-Water Resources of the Roswell Artesian Basin, New Mexico," U.S. Geological Survey, *Water-Supply Paper* 639 (Washington, D.C., 1933), 1–161; Edward E. Kinney *et al.*, *A Study of the Roswell Artesian Basin* (Roswell, 1968), 5–28; Robert R. Lansford and Bobby J. Creel, "Irrigation Water Requirements for Crop Production—Roswell Artesian Basin: An Economic Analysis and Basic Data," *New Mexico State University Water Resources Research Institute Report* 4 (June, 1969), II, 5–14.

<sup>3</sup>Warren A. Beck and Ynez D. Haase, *Historical Atlas of New Mexico* (Norman, 1969), 45–46; U.S. Dept. of the Interior, Census Office, *Report on Population of the United States at the Eleventh Census: 1890* (Washington, D.C., 1895), I, 241–242.

<sup>4</sup>U.S. Dept. of the Interior, Census Office, *Report of Agriculture by Irrigation in the Western Part of the United States at the Eleventh Census: 1890* (Washington, D.C., 1894), 198, map facing page 193; Hinton, "John Simpson Chisum," 334, 336; U.S. Dept. of Agriculture, *Climate and Man: 1941 Yearbook of Agriculture* (Washington, D.C., 1941), 1101. The average annual precipitation declined after 1942. See Kinney, *Study of the Roswell Artesian Basin*, 20.

ward some thirty miles. When in 1894 it was paralleled by a railroad, the town of Hagerman and then the communities of Dexter, Artesia, and Orchard Park appeared beside its tracks. Although the first two towns were established to serve farmers deriving their water from the Northern Canal, the latter two were based upon the availability of artesian water.<sup>5</sup>

The discovery of this source of artesian water is attributed to Nathan Jaffa of Roswell in the summer of 1890. Finding that the mineralized water from the shallow wells was detrimental to his health, he employed William Hale to drill a deeper well. At a depth of approximately 250 feet, Hale struck the San Andres aquifer and a stream of artesian water rose to the surface.<sup>6</sup> Nevertheless, it was not until after 1900 that farmers drilled wells extensively for irrigation.<sup>7</sup> Then a speculative boom punctured the aquifer with hundreds of wells. By 1905 they numbered 485, by 1910 some 1082, and by 1915 they rose to 1242. Although the wells watered bountiful crops of apples and alfalfa, too many were allowed to flow continuously, night and day, winter and summer. The use and wastage soon caused a reduction in artesian flows. In an effort to check the declining supply, the citizens of the basin persuaded the territorial legislature in 1905 and 1909 and the new state legislature in 1912 to enact regulatory legislation forbidding wastage. Unfortunately, this legislation was inadequately enforced. The wasteful practices continued, and some lands became so waterlogged that the irrigators were forced to organize drainage districts to drain away the surplus water. But the creation of these districts did not prevent artesian pressures from continuing to decline. Some wells ceased to flow altogether, causing many owners to resort to pumping while

<sup>5</sup>James D. Shinkle, *Fifty Years of Roswell History, 1867–1917* (Roswell, 1964), 93–101; C. A. Hundertmark, "Reclamation in Chaves and Eddy Counties, 1887–1912," *New Mexico Historical Review*, XLVII (1972), 303–304; Dexter Historical Society, *As We Remembered It* (Roswell, 1974), 3–7, 77–86; Leon C. Metz, *Pat Garrett: The Story of a Western Lawman* (Norman, 1974), 151–154; *Santa Fe New Mexican*, Jan. 3 and 24, 1905.

<sup>6</sup>*Roswell Register-Tribune*, Aug. 6, 1908; *Roswell Daily Record*, Oct. 7, 1937; James D. Shinkle, *Reminiscences of Roswell Pioneers* (Roswell, 1966), 121–122.

<sup>7</sup>U.S. Dept. of the Interior, *Annual Reports, 1902–1903* (Washington, D.C., 1903), pt. III, 222–224; Fiedler and Nye, *Water-Supply Paper 639*, 191–193; *Santa Fe New Mexican*, Jan. 24, 1905.

others, especially those on the western periphery of the basin, abandoned their farms to the desert.<sup>8</sup>

This was the situation in the basin when Congress passed the Federal Farm Loan Act and President Woodrow Wilson signed it on July 17, 1916. The new law authorized the creation of national farm loan associations and twelve federal land banks, all under the supervision of a Federal Farm Loan Board, to provide credit to the nation's farmers.<sup>9</sup> The board was organized within three weeks, and by the next spring it was receiving applications for charters from hastily organized loan associations. The applications came in by the hundreds, and by November 30, 1917, the board had issued 1,839 charters, 5 of them to associations in the basin communities of Roswell, Orchard Park, Dexter, Hagerman, and Artesia.<sup>10</sup>

The members of the Roswell association immediately submitted applications for loans which would be secured by mortgages held by the district land bank in Wichita, Kansas. In late 1917 the bank's president visited the valley in the company of appraisers to determine the feasibility of loaning in the area.<sup>11</sup> These visits were followed by a two-week survey made by a land-bank engineer-appraiser and a drainage specialist from the U.S. Department of Agriculture. On March 28, 1918, these two men submitted a report which brought dismay to the farmers of the area. The "artesian flow . . . is gradually failing," they noted; "a large part of the cultivated land is badly

<sup>8</sup>New Mexico, *Session Laws, 1905*, 45–48, *1909*, 177–190, *1912*, 159–173; Albert G. Fiedler, "Report on Investigations of the Roswell Artesian Basin, Chaves and Eddy Counties, New Mexico, during the Year Ending June 30, 1926," in New Mexico State Engineer, *Seventh Biennial Report, 1925–1926* (Santa Fe, 1926), 27–60; Oscar E. Meinzer, "Methods of Exploring and Repairing Leaky Artesian Wells," U.S. Geological Survey, *Water-Supply Paper 596* (Washington, D.C., 1928), 2; Fiedler and Nye, *Water-Supply Paper 639*, 3, 190–205, 219–231, 284–285; Orders Sustaining Petitions, Appointing Commissioners and Confirming Final Reports of Commissioners in the Organization of the Hagerman, Dexter-Greenfield, East Grand Plains, Roswell and Lake Arthur Drainage Districts, Cause Nos. 2485, 2554, 2559, 2595 and 3790, Office of the Clerk of the District Court of Chaves County, Roswell, N.M.

<sup>9</sup>*U.S. Statutes at Large*, XXXIX, 360–384.

<sup>10</sup>"First Annual Report of the Federal Farm Loan Board," *H.Doc. 714*, 65 Cong., 2 sess. (1918), 5–29; Federal Farm Loan Board, Minutes, vol. I (Aug. 7, 1916 to April 17, 1918), 131, 133, 146, 164, Record Group 103, National Archives.

<sup>11</sup>R. C. Horner to A. A. Jones, Jan. 25, 1918; John B. McManus to Federal Farm Loan Board, Feb. 16, 1918, Farm Credit Administration (hereafter cited as FCA), Wichita Federal Land Bank, II, Feb. 1–28, 1918, RG 103; Roswell *Evening News*, May 21, 1917.

seeped" and inadequately drained by still unfinished drainage systems. "It would seem inadvisable at this time," they concluded, "to consider long-time loans in this district."<sup>12</sup>

The response to the report was swift. Within two months the Federal Farm Loan Board had cancelled the charters of the Orchard Park, Dexter, Hagerman, and Artesia associations.<sup>13</sup> Despite their anger and disappointment, the farmers in the basin waited several years and then submitted an application for another survey. The Wichita land bank responded with another investigation in February and March 1922. Again the report was negative. "While some conditions had become better," the engineer-appraiser Harry C. Diesem informed the bank officials, "others had retrograded." Because of the "questionable water supply," he recommended "that no loans be made to lands receiving their water . . . from artesian wells."<sup>14</sup>

Though bitterly disappointing, these successive refusals by the Federal Land Bank of Wichita to loan money in the Roswell Artesian Basin did not cause the farmers to give up. Indeed, the refusals had just the opposite effect, for they prompted the citizens of Roswell to take the initiative in resolving the environmental problem that plagued them. They devised institutions calculated to regulate effectively the use of groundwater and thereby insure the future productivity of the area. The leader of this movement was the Roswell Chamber of Commerce. Organized on November 26, 1918, not long after the first loan applications had been rejected, it immediately took an interest in the protection of water supplies and the financing of drainage systems. Among its first steps was an attempt to prevent the Chicago, Rock Island and Pacific Railway from taking water out of the Ruidoso River, a tributary of the Rio Hondo which flows through Roswell. Mindful of the seepage problem in the basin, it also urged the state legislature to petition Congress to subsidize the drainage of waterlogged

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<sup>12</sup>"Pecos Valley, New Mexico-Roswell to Carlsbad: Report by John N. Kerr and W. A. Kelly, March 28, 1918," FCA, File Maps and Reports, New Mexico-Pecos River Drainage Area, I, RG 103.

<sup>13</sup>Federal Farm Loan Board, Minutes, II (April 18, 1918–March 19, 1919), 586.

<sup>14</sup>"Report: Pecos River Drainage Area-Roswell to New Mexico-Texas State Line by Engineer-Appraiser, Harry C. Diesem, June 12, 1922," FCA, File Maps and Reports, New Mexico-Pecos River Drainage Area, I, RG 103.

areas by means of a grant of land from the public domain.<sup>15</sup> Then in December 1923, following the rejection of the second application for land bank loans, its board of directors appointed a committee "to go into the whole matter of the artesian wells and water supply and recommend action." Named as chairman of this committee was Dr. Austin D. Crile, a clergyman who had also become a successful farmer.<sup>16</sup>

Austin Crile had come to farming by a circuitous route. Born in Ohio in 1870 and ordained a Lutheran minister in 1894, he had served as pastor of Chicago's Wicker Park church, which, within thirteen years, had grown from mission status to the largest of its denomination in the city. Then, in the full tide of a successful ministerial career, his wife's failing health led him to resign his pastorate and move West. The couple arrived with three of their four children in Roswell in December 1910. Crile took a part-time position as chaplain of the New Mexico Military Institute and devoted the remainder of his energies to pursuing the vocation of his boyhood. He purchased a forty-acre farm north of town, built a house and barn, drilled a well, and planted his fields to alfalfa and Jonathan apples. To provide the farm with livestock, he invested in registered Holstein dairy cattle and Duroc-Jersey swine, the first in the valley. Interested in the welfare of the community, in 1914 he assumed the initiative in organizing a regional agricultural fair. These activities so impressed his contemporaries that in 1917 he was named president of the New Mexico Agricultural College at Las Cruces.<sup>17</sup>

<sup>15</sup>Roswell Chamber of Commerce, Minutes of the Board of Directors, 1919–1921, Office of the Chamber of Development and Commerce, Roswell, N.M.; Claude Simpson, *People Incorporated* (Roswell, 1958), 7–8.

<sup>16</sup>Roswell Chamber of Commerce, Minutes of the Board of Directors, Dec. 13, 1923.

<sup>17</sup>Charles F. Coan, *A History of New Mexico* (3 vols., Chicago, 1925), III, 194–196; *Who's Who in America, 1934–1935* (Chicago, 1934), 633; Simon F. Kropp, *That All May Learn: New Mexico State University, 1888–1964* (Las Cruces, 1972), 147–150; Roswell *Evening News*, April 11, 1917; Roswell *Morning Dispatch*, Nov. 24, 1933; Roswell *Daily Record*, April 21, 1917, Nov. 24, 1933; *Sally Port*, IV (1954), 7; Simpson, *People Incorporated*, 45; interviews with Winifred Crile Bryce, April 24, 1973, and Nov. 1, 1974; interview with Herman R. Crile, June 19, 1973; Albert G. Fiedler to Robert G. Dunbar, Jan. 16, 1975; Winifred Crile Bryce to Dunbar, Feb. 15, 1975. The Crile farm was located at the present intersection of North Main Street and Mescalero Avenue. The eldest son, Dennis Rider Wood Crile, did not accompany his parents to New Mexico since he was attending the University of Wisconsin. Austin Crile served as chaplain of

Early in 1920, Crile resigned the college presidency and resumed his farming operations in the vicinity of Roswell.<sup>18</sup> Like the other farmers in the area, he had long been concerned about the problem of declining artesian pressures, water-soaked lands, and the acquisition of land bank loans. As early as 1919, while still president of the agricultural college, he had corresponded with the officials of the Federal Land Bank of Wichita,<sup>19</sup> and it is likely that he was responsible for their consenting to undertake the second survey. Though that survey had resulted in a negative report, it had convinced Crile that securing loans would be impossible until the farmers themselves demonstrated that the water supply was adequate and that effective steps were being taken to conserve the supply. When Crile sought to bring this message to the attention of the community, he encountered opposition from those who feared that public discussion would be detrimental to their business interests.<sup>20</sup> Nonetheless, more sagacious citizens realized that he was correct, and they saw to it that he was appointed chairman of the chamber of commerce's special committee on the water problem.

Shortly after his appointment, Crile asked the United States Geological Survey to determine the water supply of the basin. The agency was willing, but only on a cooperative basis. It would provide the investigators, but the New Mexicans had to furnish the money to pay their expenses. Crile at first asked the New Mexican congressional delegation for assistance, but when that effort failed, he had a bill introduced in the state legislature for an appropriation of \$5,000. This time he was successful, and the USGS undertook the investigation.<sup>21</sup>

The geologist in charge of the Geological Survey's Division

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the New Mexico Military Institute in Roswell from 1911 to 1946, with the exception of the years he was president of the New Mexico Agricultural College, now New Mexico State University, and two years in the 1930s. In 1919, Tusculum College of Greeneville, Tennessee, awarded him an honorary doctor of laws degree.

<sup>18</sup>Coan, *History of New Mexico*, III, 195; Kropp, *That All May Learn*, 159–161.

<sup>19</sup>Roswell *Daily Record*, Nov. 24, 1933; Roswell *Morning Dispatch*, Nov. 24, 1933.

<sup>20</sup>Simpson, *People Incorporated*, 42–43; interview with Herman R. Crile, June 19, 1973; Fiedler to Dunbar, Jan. 16, 1975.

<sup>21</sup>Roswell Chamber of Commerce, Minutes of the Board of Directors, March 27, July 29, Dec. 15, 1924, March 26, 1925; Roswell *Daily Record*, Nov. 24, 1933; New Mexico, *Session Laws*, 1925, 247–248.

of Ground Water was Oscar E. Meinzer, whose pioneering investigations and writings eventually earned him the title of father of modern groundwater hydrology. He chose young Albert G. Fiedler, a native of Pennsylvania with professional engineering experience in Idaho, for the assignment; later he added a geologist named S. Spencer Nye. Fiedler arrived in Roswell on July 6, 1925, and was given an office recently vacated by the closure of the Roswell Land Office.<sup>22</sup> Meinzer joined him a few days later in order to help inaugurate the investigation.<sup>23</sup>

For the next twelve months, Fiedler worked assiduously measuring the pressure or head in numerous wells, determining the rate of flow, checking the underground leakage with a specially designed current meter, and observing the surface wastage. The waste from the untended wells was excessive, he observed in the report submitted in August 1926. During the winter of 1925–1926 alone, he noted, about 25,000 acre-feet of water had been lost. Although laws against such waste had been on the statute books for twenty years, he counted 225 wells without valves to control the flow of water. Such violations, together with unrestricted drilling, had caused well levels to decline and the area of artesian flow to shrink from the original 670 square miles to 430.<sup>24</sup> The drilling of new wells, he concluded, would threaten the water rights of existing users: “The most urgent immediate need is for legislation that will prevent further irrigation developments with artesian water except as it may be conclusively proved that such developments will not injure the water rights of the present irrigator by lowering the artesian head.”<sup>25</sup>

Such action had been proposed as early as 1909 only to be

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<sup>22</sup>Oscar E. Meinzer to Norah D. Stearns, July 10, 1925, O. E. Meinzer Papers, RG 57; Fiedler, “Report on Investigations of the Roswell Artesian Basin,” 30; *Who’s Who in Engineering*, 1964 (9th ed., New York, 1964), 573–574; J. McKeen Cattell and Jaques Cattell, eds., *American Men of Science: A Biographical Directory* (5th ed., New York, 1933), 835; O. M. Hackett, “The Father of Modern Ground Water Hydrology,” *Ground Water*, II (1964), 2–5; Fiedler to Dunbar, Feb. 15, 1975.

<sup>23</sup>O. E. Meinzer to Norah D. Stearns, July 10, 1925; Meinzer to Harold T. and Norah D. Stearns, July 17, 1925, Meinzer Papers.

<sup>24</sup>Fiedler, “Report on Investigations of the Roswell Artesian Basin,” 32–60.

<sup>25</sup>*Ibid.*, 40–43.

defeated by the county's agricultural interests.<sup>26</sup> This time, however, the need for loans to support the area's increasingly commercialized agriculture prompted a different response. Austin Crile and his chamber of commerce associates readily accepted the recommendation and prepared to implement it.<sup>27</sup>

Implementation, however, seemed impossible. A major obstacle was the law. The groundwater law of New Mexico, as in most of the other western states, rested on the English principle of absolute ownership. According to this principle, landowners had as firm a right to the water beneath the surface of their land as they did to the soil and the rocks. They could use the water as they pleased, even if their actions exhausted the supply in the wells of their neighbors. In short, the farmers of the Roswell basin owned the water in their artesian wells in fee simple; they were the absolute owners. The state could regulate the use of the water, but it could not deny that use.<sup>28</sup>

In devising a solution to this problem, Austin Crile sought the assistance of Albert Fiedler and one of his own sons, Herman R. Crile, an attorney in Roswell.<sup>29</sup> While the latter consulted his law books, the former wrote to Meinzer in

<sup>26</sup>Roswell *Register-Tribune*, Jan. 12 and 22, Feb. 12 and 16, 1909; Roswell *Record*, Feb. 12 and 19, 1909.

<sup>27</sup>Roswell Chamber of Commerce, Minutes of the Board of Directors, Aug. 31, Dec. 6, 1926; A. G. Fiedler to O. E. Meinzer, July 6, 1926, Meinzer Papers.

<sup>28</sup>Samuel C. Wiel, *Water Rights in the Western States* (3rd ed., 2 vols., San Francisco, 1911), II, 970–972; Wells A. Hutchins, "Selected Problems in the Law of Water Rights in the West," U.S. Dept. of Agriculture, *Miscellaneous Publication 418* (Washington, D.C., 1942), 156–159; Edward J. Farmer, "Colorado's Ground-Water Problems—Water and the Law," *Colorado State University Experiment Station Bulletin 505-S* (Jan. 1960), 7–9. As used in this essay, the term "groundwater" refers to that fluid which the courts have called "percolating water." Traditionally, they have divided groundwaters into water flowing in defined subterranean watercourses and percolating water which oozes through the earth. To the first category, western courts in prior appropriation states have uniformly applied the appropriation doctrine. Because hydrologists have demonstrated that all groundwater is part of the hydrologic cycle, the statutes in many western states no longer make this distinction. See Wells A. Hutchins, "Trends in the Statutory Law of Ground Water in the Western States," *Texas Law Review*, XXXIV (1955), 157–160.

<sup>29</sup>Interview with Herman R. Crile, June 19, 1973; Winifred Crile Bryce to Dunbar, Feb. 15, 1975; Fiedler to Dunbar, Jan. 16, 1975. After graduation from the New Mexico Military Institute, Herman Crile studied law at Washington and Lee University until his studies were terminated by military service in World War I. After the armistice, he returned to New Mexico, read law in Santa Fe, and was admitted to the bar in January 1920. He practiced law in Albuquerque and Raton before returning to Roswell as a member of the law firm of Hurd & Crile.

December 1926, requesting information concerning legislation regulating the use of groundwater in other states.<sup>30</sup> Upon receiving copies of the relevant statutes, he noted that most of them provided for the absolute ownership rule. "I have looked through these laws rather carefully," he told Meinzer, "but am unable to find anything along the line of specific legislation restricting the drilling of wells." Then, significantly, he added, "The only type of legislation which may be of help seems to be that of placing the ground water under the same rulings for appropriation as surface water."<sup>31</sup>

Both Fiedler and Herman Crile were aware that the doctrine of prior appropriation governed the use of surface waters in New Mexico. This legal doctrine was based on the assumption that the state, rather than private individuals, owned those waters and could regulate their use. All that was needed to restrict drilling, they thought, was legislation applying the doctrine to groundwaters. Herman Crile was convinced that, since the courts had declared that Spanish heritage and climate had determined the law of surface waters in the Southwest, the courts would apply the same reasoning to underground waters. Consequently, he sought a statute that would be "declaratory" of existing, unwritten law.<sup>32</sup>

The younger Crile assumed the responsibility for drafting a bill that would transform this legal philosophy into law.<sup>33</sup> The task was not easy. "Very little progress has been made in drawing up the bill," Fiedler wrote to Meinzer in January 1927, after laboring a month on the proposal, "as it appears that there is no specific precedent for such a law and that it will be difficult to make it constitutional."<sup>34</sup> Another problem was the

<sup>30</sup>A. G. Fiedler to O. E. Meinzer, Dec. 2, 1926; Meinzer to Fiedler, Dec. 9, 1926, A. G. Fiedler Papers, RG 57.

<sup>31</sup>Fiedler to Meinzer, Dec. 15, 1926, *ibid.*

<sup>32</sup>*Yeo v. Tweedy*, 34 N.M. 614, 286 Pac. 972 (1929); *Boquillas Land & Cattle Company v. Curtis*, 213 U.S. 343 (1909), 11 Ariz. 139, 89 Pac. 508 (1907); Brief of Appellee, *Yeo v. Tweedy*, Cause No. 3408, Office of the Clerk of the Supreme Court of New Mexico, Santa Fe, N.M.; *Arizona Farmer*, XXX (Nov. 10, 1951), 1, 22; interview with Herman R. Crile, June 19, 1973.

<sup>33</sup>A. G. Fiedler to W. E. Hale, Oct. 14, 1961, Office of the State Engineer of New Mexico, Santa Fe, N.M.; *Roswell Daily Record*, Nov. 2, 1954; Cecil Bonney, *Looking over My Shoulder: Seventy-Five Years in the Pecos Valley* (Roswell, 1971), 38; interview with Herman R. Crile, June 19, 1973.

<sup>34</sup>Fiedler to Meinzer, Jan. 22, 1927, Fiedler Papers.

coverage of the proposed law. If the measure extended the appropriation doctrine to the ground-waters of the entire state, it was certain to be defeated in the legislature because of opposition in the nonartesian areas to regulation and the loss of property rights. For this reason, the authors restricted the bill's applicability to water "found in underground streams, channels, artesian basins, reservoirs, or lakes, the boundaries of which may be reasonably ascertained by scientific investigations or surface indications." Only in such areas were the groundwaters to be declared public and "subject to appropriation for beneficial uses under the existing laws of this State relating to appropriation . . . of waters from surface streams." The authors placed the administration of the law in the hands of the state engineer, who was to extend his authority over a groundwater basin upon the receipt of a petition signed by not less than ten percent of the water users within it. The bill recognized the vested rights of those appropriators who at the time of its passage were already using a basin's groundwaters "for beneficial purposes."<sup>35</sup>

The Roswell Chamber of Commerce, of which Austin Crile was now president, promptly endorsed the bill, and two legislative friends from Chaves County introduced it into the New Mexico House of Representatives.<sup>36</sup> When the measure came to a vote on March 7, 1927, it ran into difficulties. In the confusion caused by the "absence of the majority leader," Fiedler reported, "the native element . . . was not informed as to what bill they were voting upon." The result was the defeat of the bill by a vote of 24 to 16.<sup>37</sup> However, that evening the supporters moved a reconsideration, and W. C. Reid, who had written the 1905 statute regulating the use of artesian water, and State Engineer Herbert W. Yeo were called in to explain the importance of the bill. Both men described the overexploit-

<sup>35</sup> Albert G. Fiedler, "A Look at New Mexico's Water Problems," in New Mexico State University, *Proceedings, Third Annual Water Conference, Nov. 6-7, 1958* (Las Cruces, 1958), 65; House Bill No. 314, House Bills, 201-350, 8th Legislature, 1927, New Mexico State Records Center and Archives, Santa Fe, N.M.

<sup>36</sup> Roswell Chamber of Commerce, Minutes of the Board of Directors, Jan. 18 and 28, 1927; New Mexico, *House Journal*, 1927, 162.

<sup>37</sup> A. G. Fiedler to Max H. Carson, March 12, 1927, Fiedler Papers; New Mexico, *House Journal*, 1927, 265.

tation of the Roswell Artesian Basin, and Reid put his finger squarely on the problem: "Wells flowing sufficiently to irrigate 150 acres 10 years ago now have to be pumped. . . . Feeling that new wells will . . . take part of their water, the farmers now having wells want the same protection that users of surface waters have." With the purpose of the bill better understood, the second vote was 31 to 12 in its favor; the next day the measure easily passed the senate by a vote of 20 to 2.<sup>38</sup>

Nevertheless, the passage of the new law marked only the beginning of attempts to provide New Mexico with effective groundwater-control legislation—legislation necessary so that farmers of the Roswell Artesian Basin could secure the much-needed land bank loans. In April and May citizens circulated petitions to apply the statute to the basin. The required signatures were collected, and on July 1, 1927, the state engineer assumed jurisdiction over the basin, closing it to new appropriations.<sup>39</sup> Austin Crile wrote to the Wichita land bank and asked for a new survey. The bank's reply was disappointing: there would be no survey nor loan negotiations until the constitutionality of the groundwater statute had been confirmed by the courts. Crile immediately arranged for a friendly suit.<sup>40</sup>

John Tweedy, a prominent cottongrower and a member of the Roswell Chamber of Commerce, announced his intention of drilling a well without the permission of State Engineer Herbert W. Yeo. At the request of Yeo, District Court Judge Granville A. Richardson asserted the constitutionality of the 1927 law and enjoined Tweedy from drilling a well. But this did not resolve the question. When Yeo asked the court to

<sup>38</sup> *Santa Fe New Mexican*, March 8, 1927; New Mexico, *House Journal*, 1927, 275; *Senate Journal*, 1927, 241; Fiedler to Meinzer, March 14, 1927, Fiedler Papers.

<sup>39</sup> Roswell Chamber of Commerce, Minutes of the Board of Directors, May 23, 1927; Robert C. Dow to Herbert W. Yeo, May 28, 1927, Office of the State Engineer of New Mexico, Santa Fe, N.M.; Fiedler to Meinzer, March 14, 1927, Fiedler Papers; New Mexico State Engineer, *Eighth Biennial Report, 1926–1928* (Santa Fe, 1928), 18–19; Albert G. Fiedler "Ground Water in New Mexico Now Subject to Appropriation," *Engineering News-Record*, XCIX (Sept. 8, 1927), 395; *Roswell Daily Record*, July 5 and 20, 1927.

<sup>40</sup> Milas Lasater to Austin D. Crile, Jan. 24, 1928; Fiedler to Meinzer, March 13, 1928, Fiedler Papers; Roswell Chamber of Commerce, Minutes of the Board of Directors, March 12, May 18, and July 20, 1928.

restrain another farmer, Oscar Pearson, from drilling, he was rebuffed. This time the court, under a different judge, declared the groundwater statute unconstitutional. Both cases, *Yeo v. Tweedy* and *Yeo v. Pearson*, were then appealed to the New Mexico Supreme Court.

Tweedy's lawyer, Tomlinson Fort, argued that the English rule of absolute ownership prevailed in New Mexico and that, consequently, the new statute was unconstitutional since it deprived landowners of their property rights in groundwater without due process of law. Herman Crile, who served as attorney for the state engineer, countered by insisting that the doctrine of prior appropriation, not the English rule, had always been the law of New Mexico. The statute simply recognized reality.<sup>41</sup>

Judge John C. Watson, who wrote the decision for the court, was familiar with the problems arising from the overexploitation of an artesian aquifer. He had lived a number of years in the Mimbres Valley of southern New Mexico where a situation similar to that in the Pecos Valley existed.<sup>42</sup> Despite his familiarity with the problem, his decision proved disconcerting to the supporters of the new groundwater law. He agreed with Herman Crile that the controversial statute was "declaratory" of existing law and "fundamentally sound," but he found the law unconstitutional because of a technicality. New Mexico's constitution specified that no law could be "revised or amended, or . . . extended by reference to its title only." The groundwater statute violated this provision because it extended the coverage of the doctrine of prior appropriation by making a general reference to "the existing laws of this State relating to appropriation . . . of waters from surface streams."<sup>43</sup>

<sup>41</sup>*Yeo v. Tweedy*, 34 N.M. 611–614, 286 Pac. 970–972 (1929); Transcript of Record, Brief of Appellee, *Yeo v. Tweedy*, Office of the Clerk of the Supreme Court of the State of New Mexico, Santa Fe, N.M.; New Mexico State Engineer, *Ninth Biennial Report, 1928–1929* (Santa Fe, 1929), 41–42.

<sup>42</sup>*Who's Who in America, 1932–1933* (Chicago, 1932), 2391; Walter N. White, "Preliminary Report on the Ground-Water Supply of Mimbres Valley, New Mexico," in U.S. Geological Survey, *Water-Supply Paper 637* (Washington, D.C., 1931), 70–72, 81–85.

<sup>43</sup>*Yeo v. Tweedy*, 34 N.M. 614–629, 286 Pac. 972–977 (1929); Article 4, section 18 of the New Mexico constitution reads, "No law shall be revised or amended, or the provisions thereof extended by reference to its title only; but each section thereof as revised, amended or extended shall be set out in full."

Nevertheless, the water conservationists were not discouraged. Austin Crile reported to the Roswell Chamber of Commerce in May 1929, "that the artesian well law had been declared unconstitutional by the Supreme Court because of a technicality[,] but that the Supreme Court had upheld the principal [sic] for which the organization had been contending[,] namely that the underground waters were property of the state and subject to appropriation just as surface streams were."<sup>44</sup>

Since the court had upheld the principle of the legislation, Crile again approached the land bank in Wichita, which responded by sending out an engineer-appraiser in March 1930. Again the report was negative. Wells were flowing unchecked and the water levels were still declining, the investigator informed his superiors.

In twenty-five years \$2,000,000.00 worth of improvements have disappeared from farms and 134 square miles of farm land have been abandoned. In 1904 the artesian area was 670 square miles; in 1916, 505 square miles; and in 1925, 430 square miles[,] and is slowly decreasing. . . . The U.S. Geological Survey had a man on the Roswell Project for 2½ years studying the water question. His recommendations for throttling the wells with valves and preventing of waste [of] water were not followed. As the Well Supervisor expressed it, the farmer thinks he owns the air above his land to the sky and the ground under his land down to China.<sup>45</sup>

Rebuffed again in their quest for land bank loans, the groundwater reformers turned their attention to the preparation of a bill to replace the nullified statute of 1927. Herbert Yeo, the state engineer, took the initiative and drafted a lengthy measure which he submitted to a conference of interested citizens meeting in Santa Fe in December 1930. At this conference Austin Crile urged submission to the legislature of two bills, one a declaration of state or public ownership of groundwater and the other a code of regulations for its

<sup>44</sup>Roswell Chamber of Commerce, Minutes of the Board of Directors, May 3, 1929.

<sup>45</sup>"Memorandum of J. B. Marcellus, Engineer-Appraiser, to John Fields, April 8, 1930, concerning Roswell, New Mexico, Irrigation Project," FCA, New Mexico-Pecos River Drainage Area, Correspondence, 1918–1944. RG 103.

appropriation and use.<sup>46</sup> This view prevailed, and the spokesman for the reformers in the senate, Senator John H. Mullis of Chaves County, introduced the two bills into the 1931 legislature. However, so many of the legislators were opposed to regulation and a change in property rights that the bills were given rough treatment. The senators killed the code of regulations in committee and, after rewriting the public ownership bill twice, passed it, 18 to 2, with a crippling amendment which required the approval of a majority of the "free holders" in an affected area before it could be subjected to regulation. The house rejected the amendment, but passed the measure by a slim margin of 25 to 21.<sup>47</sup>

This legislature also enacted two other groundwater measures of note. Under increasing pressure from the land bank and the state engineer, Roswell citizens had become more concerned about the wastage of water from abandoned wells. Plugging of wells was a remedy, but it was expensive; the Roswell people proposed the creation of a conservancy district with the authority to tax. Representative Clarence E. Hinkle, son of a former governor of New Mexico, incorporated the idea into a bill which authorized district courts to organize artesian conservancy districts with the power to impose levies on both urban and agricultural properties. The house and senate approved this bill with little debate.<sup>48</sup> But since the formation of a conservancy district would take months, Hinkle and his legislative associates introduced an emergency measure to appropriate \$20,000 for the purpose of plugging wells by the state engineer. It, too, was enacted with ease.<sup>49</sup>

<sup>46</sup>"Proceedings of the Conference on Underground Waters Held at Santa Fe, New Mexico, Monday, December 22nd, 1930," and Herbert W. Yeo to A. P. Johnson, Sept. 29, 1930, Office of the State Engineer of New Mexico, Santa Fe, N.M.; *Santa Fe New Mexican*, Dec. 23, 1930.

<sup>47</sup>New Mexico, *Senate Journal*, 1931, 225, 238, 348, 369, 375, 398–399, 546–547; *House Journal*, 1931, 694, 724, 806, ms., New Mexico State Records Center and Archives, Santa Fe, N.M.; Senate Bill Nos. 95 and 112, Senate Bills, 71–150, 10th Legislature, New Mexico State Records Center and Archives.

<sup>48</sup>New Mexico, *House Journal*, 1931, 402, 445, 649–650, 791–792; *Senate Journal*, 1931, 383, 396, 409–410, 432–433, ms., New Mexico State Records Center and Archives; House Bill No. 308, House Bills, 253–355, 10th Legislature, New Mexico State Records Center and Archives; New Mexico, *Session Laws*, 1931, 156–164; interview with Clarence E. Hinkle, April 19, 1973.

<sup>49</sup>New Mexico, *House Journal*, 1931, 102; *Senate Journal*, 1931, 399, ms., New Mexico

These three laws, the product of interaction among national, state, and local agencies, constituted an impressive achievement by the Chaves County delegation. The first and most important of the laws reaffirmed public ownership of the “waters of underground streams, channels, artesian basins, reservoirs, or lakes, having reasonably ascertainable boundaries.” It also provided for the appropriation of these waters by means of an application to the state engineer, who could issue a permit if there was an available water supply; otherwise, “the application shall be denied.”<sup>50</sup> Acting under the authority of this statute, the state engineer on July 29, 1931, designated an area within the Mimbres Valley as an “ascertainable” underground water basin, and on August 21 he established his control over a major portion of the Roswell Artesian Basin, denying within it any further increase of acreage irrigated from the artesian aquifer.<sup>51</sup>

With the enactment of this legislation New Mexico pioneered in the creation of effective groundwater-control institutions. Earlier regulatory legislation in a dozen or more states, including New Mexico, had attempted to conserve artesian water without altering property rights. The New Mexico statutes of 1927 and 1931, in applying the doctrine of prior appropriation to groundwater, altered those rights and provided for more comprehensive and effective controls. It is true that New Mexico was not the first state to take this action. Both Nevada and Oregon preceded it in applying the appropriation doctrine to groundwater—Nevada in 1913 and Oregon in 1927, only two weeks before the passage of the Crile-Fiedler statute. However, Nevada rescinded its legislation in 1915 and Oregon refashioned its statute after the laws of New Mexico in 1933. Oregon’s influence on the development of western

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State Records Center and Archives; House Bill No. 78, House Bills, 1–100, 10th Legislature, New Mexico Records Center and Archives; New Mexico, *Session Laws, 1931*, 119–121.

<sup>50</sup>New Mexico, *Session Laws, 1931*, 229–231.

<sup>51</sup>“Declaration of an Underground Water Basin in the Mimbres Valley, Luna County, New Mexico,” Order dated 29 July 1931; “Declaration of an Underground Water Area in the Roswell Artesian Basin, Chaves and Eddy Counties, New Mexico,” Order dated 21 Aug. 1931, Office of the State Engineer of New Mexico, Santa Fe, N.M.; Association of Western State Engineers, *Proceedings: 4th Annual Conference, Oct. 28–30, 1931* (N.p., 1931), 172–175.

groundwater-control institutions has been minimal compared to that of the Sunshine state.<sup>52</sup>

Although the artesian conservancy district law was not as influential as the appropriation statute, the Roswell Chamber of Commerce viewed its implementation as an effective means of meeting the land bank's demand for greater conservation of water. On September 8, 1931, Judge Granville Richardson created the Pecos Valley Artesian Conservancy District and, on the following day, appointed three commissioners to determine its boundaries and taxable properties, establish districts for the election of five directors, and write an election code. The election was held on February 20, 1932, and three days later the new board of directors met and appropriately chose Austin D. Crile as president.<sup>53</sup>

With the creation of these groundwater-related institutions, the citizens of Roswell became hopeful that loans might finally be authorized by the land bank. The chamber of commerce sent Crile to Wichita where, much to his satisfaction, the bankers agreed to send another team of appraisers to the valley.<sup>54</sup> In preparation for this visit, the Roswell people stepped up their efforts to reduce the waste of water and urged the state engineer's well supervisor to inspect every well in the basin and to prosecute violators of the conservation laws.<sup>55</sup>

The bank appraisers, J. B. Marcellus and W. R. Parkhill, arrived in March 1932. After a nine-day investigation, they met with the directors of the Pecos Valley Artesian Conservancy District whom they complimented for the steps which had been taken to form a conservancy district. The appraisers then departed. On April 2, 1932, they submitted their

<sup>52</sup>*Report of the President's Water Resources Policy Commission* (3 vols., Washington, D.C., 1950), III, 756; Phillip D. Chadsey, "Rights to Underground Waters in Oregon: Past, Present and Future," *Willamette Law Journal*, III (1965), 318–319; Hutchins, "Selected Problems," 164, 166–167, 241; Nevada, *Session Laws, 1913*, 192–193, 1915, 323; Oregon, *Session Laws, 1927*, 576–579, 1933, 389–390.

<sup>53</sup>Record of District Court of Chaves County, XXX, 2–7, 322, Office of the Clerk of the District Court of Chaves County, Roswell, N.M.; Pecos Valley Artesian Conservancy District, Minutes of the First Meeting of the Board of Directors, Feb. 23, 1932, Office of the Pecos Valley Artesian Conservancy District, Roswell, N.M.; Roswell *Morning Dispatch*, Sept. 11 and 13, 1931.

<sup>54</sup>Roswell Chamber of Commerce, Minutes of the Board of Directors, Aug. 6, Oct. 29, 1931; Roswell *Morning Dispatch*, Oct. 29, Nov. 5, 1931.

<sup>55</sup>Roswell *Morning Dispatch*, Nov. 6, 1931.

recommendations; once more they were negative!

The appraisers were not disturbed about declining water levels—in fact, they observed “that lowering of the artesian head has about ceased.” Instead, they criticized the “bad financial condition” of the drainage districts. “Suits have been tried,” they noted, “and judgements granted the bond holders against three districts.” They recommended withholding loans “until more favorable conditions are brought about, at which time further study of the results of well plugging . . . and other material progress[,] such as refinancing of drainage districts[,] may be more conclusively carried out.”<sup>56</sup> These recommendations were disappointing, all the more so because the Pecos Valley and the nation were now in the midst of the Great Depression.

The economic slowdown worsened. Harassed by low agricultural prices, farmers in Iowa organized the Farm Holiday Movement. In November 1932 the nation chose Franklin D. Roosevelt as President, and the following March, in an effort to cope with the depression, he inaugurated the New Deal. During these months, while the conservancy district waited for the collection of a 1.5 mill levy, the state engineer, with \$20,000 at his disposal, plugged sixteen wells. The effects were immediate. Water levels in the winter of 1932 were five feet higher than those of the previous winter. Encouraged and still hopeful, Austin D. Crile, in May 1933, petitioned the land bank to take another look at the basin. J. B. Marcellus returned for a one-day visit and saw no reason to alter the previous decision.<sup>57</sup>

Leadership of the farm loan movement now shifted to farmers in the vicinity of Artesia, men less patient than Crile. Finding it difficult to make mortgage payments at current

<sup>56</sup>“Report of J. B. Marcellus and W. R. Parkhill on the Roswell Artesian Area, April 2, 1932,” FCA, New Mexico-Pecos Valley Artesian Conservancy District, RG 103; John Fields to A. D. Crile, April 12, 1932, FCA, New Mexico-Pecos Valley Artesian Conservancy District, I, Correspondence, 1930–Aug. 31, 1934, *ibid.*; Pecos Valley Artesian Conservancy District, Minutes of the Third Meeting of the Board of Directors, March 22, 1932; Roswell *Morning Dispatch*, March 19, 22, and 23, 1932; Roswell *Daily Record*, April 18, 1932.

<sup>57</sup>New Mexico State Engineer, *Eleventh Biennial Report, 1932–1934* (Santa Fe, 1934), 160; Pecos Valley Artesian Conservancy District, Minutes of the Board of Directors, March 25, 1933; J. B. Marcellus to W. R. Parkhill, May 13, 1933; J. B. Marcellus to John Fields, May 24, 1933, FCA, New Mexico-Pecos Valley Artesian Conservancy District, I, Correspondence 1930–Aug. 31, 1934, RG 103.

prices, farmers throughout New Mexico had grown impatient. Assembling from seven counties in late March 1933, they organized in Portales a state unit of the Farmers' Holiday Association. In April, more than a thousand of them jammed the Portales courthouse to stop a mortgage foreclosure.<sup>58</sup>

In an effort to relieve the distress of the nation's farmers, the Congress, on May 12, enacted the Emergency Farm Mortgage Act of 1933, which made available \$200,000,000 for loans that carried more risk than those allowed by the Federal Farm Loan Board. The administration of the loans was placed in the hands of the farm loan commissioner (the executive officer of the board), who in turn acted through an agent in each of the federal land banks. On May 27, President Roosevelt placed the management of the loans and other agricultural credits under the jurisdiction of the Farm Credit Administration with Henry Morgenthau, Jr., at its head.<sup>59</sup>

The Artesia farmers soon learned of these developments, and in June 1933 they inquired of the farm loan commissioner's agent in Wichita concerning the availability of these new loans for the Roswell Artesian Basin. In August, after reviewing the history of the loan controversy, the agent too refused to make loans in the basin.<sup>60</sup> Thereupon, the Artesian farm leaders carried their case to Congressman Dennis Chavez, who had grown up in a farming community in the Rio Grande Valley. Chavez in turn carried their grievance to Henry Morgenthau, Jr., and to Albert S. Goss, the land bank commissioner in Washington, D.C.<sup>61</sup> This political intervention brought action. Morgenthau, after dispatching a deputy land bank commissioner to review the situation in the Pecos Valley, authorized the granting of short-term loans to basin farmers not in the distressed drainage districts. Responding to this

<sup>58</sup>Portales *Valley News*, March 9, 16, and 23; April 27, 1933.

<sup>59</sup>*U.S. Statutes at Large*, XLVIII, 41–54; Farm Credit Administration, *First Annual Report* (Washington, D.C., 1933), 1–11.

<sup>60</sup>John Fields to W. R. Hornbaker, June 19 and 24, 1933; Hornbaker to C. G. Shull, June 27, 1933; Shull to R. L. Paris, Aug. 11, 1933, FCA, New Mexico-Pecos Valley Artesian Conservancy District, I, Correspondence, 1930–Aug. 31, 1934, RG 103.

<sup>61</sup>W. H. Walker to Dennis Chavez, Sept. 15, 1933; Chavez to Albert S. Goss, Sept. 21, 1933; Chavez to J. H. Guill, Sept. 30, 1933; Chavez to Henry Morgenthau, Jr., Oct. 12, 1933; Morgenthau to Chavez, Oct. 20, 1933, *ibid.*; Albuquerque *Tribune*, Sept. 11, 1933; *Santa Fe New Mexican*, Sept. 12, 1933; *Artesia Advocate*, Sept. 21, 1933; Barry A. Crouch, "Dennis Chavez and Roosevelt's 'Court-Packing' Plan," *New Mexico Historical Review*, XLII (1967), 262.

directive, the Federal Land Bank of Wichita appointed Austin D. Crile as its loan representative, and he opened an office in Roswell on November 6, 1933.<sup>62</sup>

The fifteen-year quest for federal land bank loans by the citizens of the Roswell Artesian Basin had ended. The campaign had far-reaching effects, for it had prompted New Mexicans to create institutions for the management of groundwater which have influenced many other states. Of the nineteen states lying west of the 98th meridian, no less than thirteen have followed New Mexico's example, by abrogating the applicability of the English rule to groundwater and replacing it with the appropriation doctrine. The New Mexican pattern of restricting drilling and water consumption to designated groundwater basins critically short of this resource has been copied by all of the Rocky Mountain states as well as Oregon, Washington, Nebraska, Oklahoma, and Hawaii. Those states which have applied the appropriation doctrine to groundwater have also adopted, with some modifications, New Mexico's permit system, which in turn was modeled on Wyoming's surface water law. And in the more humid section of the United States at least twelve states have borrowed either consciously or accidentally some aspects of the system of groundwater control which Austin Crile and his associates originated.<sup>63</sup> Indeed, half of the states of the union have benefited from New Mexico's institutional pioneering.

<sup>62</sup>C. W. Carson to Albert S. Goss, Oct. 4, 1933; J. H. Guill to Dennis Chavez, Oct. 17, 1933; Henry Morgenthau, Jr., to Chavez, Oct. 20, 1933; Goss to John Fields, Oct. 21, 1933; Fields to Goss, Oct. 25, 1933; Fields to Guill, Nov. 6, 1933, FCA, New Mexico-Pecos Valley Artesian Conservancy District, I, Correspondence 1930–Aug. 31, 1934, RG 103; Roswell *Morning Dispatch*, Nov. 2 and 7, 1933; Artesia *Advocate*, Nov. 9, 1933; Roswell *Daily Record*, Nov. 1 and 2, 1933.

<sup>63</sup>Robert Emmet Clark, ed., *Waters and Water Rights* (7 vols., Indianapolis, 1967–1976), V, 412–420; Robert G. Dunbar, "The Adaptation of Groundwater-Control Institutions to the Arid West," *Agricultural History*, LI (1977), 672–679; A. Watson McHendrie, "Underground Water Legislation," *Rocky Mountain Law Review*, XXIII (1951), 443; Clyde O. Fisher, Jr., "Western Experience and Eastern Appropriation Proposals," in David Haber and Stephen W. Bergen, eds., *The Law of Water Allocation in the Eastern United States* (New York, 1958), 75–94; Jeffrey O'Connell, "Iowa's New Water Statute—The Constitutionality of Regulating Existing Uses of Water," *Iowa Law Review*, XLVII (1962), 557; Milton S. Heath, Jr., "Water Management Legislation in the Eastern States," *Land and Water Law Review*, II (1967), 99–116; Frank E. Maloney, Sheldon J. Plager, and Fletcher N. Baldwin, Jr., *Water Law and Administration: The Florida Experience* (Gainesville, 1968), 172–195, 279–286; Nebraska, *Session Laws*, 1975, 1145–1158; Mississippi, *Session Laws*, 1976, 785–792.